

**ALLOSYNCARPIA TERNATA, A NEW GENUS AND
SPECIES OF MYRTACEAE SUBFAMILY
LEPTOSPERMOIDEAE FROM NORTHERN AUSTRALIA**

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Summary

Allosyncarpia S. T. Blake with one species *A. ternata* S. T. Blake has flowers partly fused into small heads, circumsciss calyx-tube, many free stamens, 2-celled ovary with horizontal ovules, 1-seeded capsules, large seeds with large much convoluted cotyledons and unique branched septate hairs.

In 1955 Mr. W. Bateman then Forest Officer at Darwin collected a specimen with flowers partly connate in small heads and old infructescences of a tree in the northern part of the Northern Territory that could not be reconciled with any known genus of the Myrtaceae to which family the species certainly belonged, but the "fruits" appeared so abnormal that it could not certainly be determined whether the mature fruit was dry or fleshy; these structures eventually proved to be the connate lower parts of the calyx-tubes from which seed and endocarp had fallen away. Bateman collected other material including wood samples but this did not resolve the doubt. The structure of the wood also could not be reconciled with that of any known genus. Mr. L. Beens who succeeded Mr. Bateman collected abundant flowering material from another locality in 1965 but it remained for Mr. N. Byrnes to collect good fruiting specimens with seed in 1972 before the relationships of the species could be satisfactorily studied.

As byproducts of the search for relationships the nature of the hairs found in some genera was examined, a reinvestigation of the floral structure of *Eucalyptopsis* was carried out, and embryos from some genera were studied.

Allosyncarpia S. T. Blake; genus novum ob flores fructusque sessiles in capitulis partim connatos *Syncarpium* Ten. revocat, ob calycis tubum supra ovarium circumscissum atque stamina pernumerosa partim deflexa atque seminis solitarii formam *Eucalyptopsem* C. T. White simulans, quoad ovula seminaque horizontalia, folia terna ab utraque differt et ob inflorescentiam elongatum pilis ramosis dense indutam insigna.

Flores hermaphroditii. Tubus calycis \pm turbinatus supra ovarium productus, post anthesin pars libera circumscissa; lobi 5 herbacei latissime triangulares. Petala 5 trullato-ovato basi latiuscula subcuneata vix unguiculata, sepalis longiora. Stamina pernumerosa libera in seriebus pluribus dense congesta petalis longiora exteriora in alabastro interiora semper deflexa; antherae subquadratae versatiles connectivo parvo loculis parallelis longitudinaliter dehiscentibus. Ovarium omnino adnatum apice leviter convexum glabrum circum

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stylum haud depressum, 2-loculare; ovula 6-10 campylotropa, crassa, horizontalia, peltata; placenta lata haud crassa in medium dissepimentum fere omnino adnata. Stylus teres calycem haud superans glaber; stigma parvum. Fructus semisuperus capsularis apice dehiscens 2 valvis loculo altera fere semper abortivo; post dehiscenciam exocarpium pars libera mox tandem etiam endocarpium totum secedentia. Semen unicum depresso ovoideum, horizontale, peltatum hilo magno; tertia tenuis; embryo semen implens; cotyledones cornei, crassi inaequales; radícula brevissima.—Arbor sempervirens perulis carens; folia terna, dorsiventralia, pellucido-punctata, pinnatim nervosa vena intra-marginali distincta; flores parvi sessiles 3(-5) nim capitata parte inferiore connati, capitulis pedunculatis in racemis laxis elongatis vel paniculis angustis terminalibus vel etiam axillaribus dispositis; inflorescentia tota pilis minimis ramosis septatis dense tomentosa.

Species typica adhuc unica *A. ternata* S. T. Blake Australiae septentrionales incola.

Flowers hermaphrodite. Calyx-tube \pm turbinate, produced above the ovary, the free part circumsciss after flowering; lobes 5 herbaceous very broadly triangular. Petals 5 trullate ovate with a relatively broad subcuneate base, longer than the sepals. Stamens very numerous closely packed in several series, longer than the petals, all deflexed in bud, the inner ones persistently so; anthers subquadrate, versatile, with a small connective and parallel cells opening throughout in longitudinal slits. Ovary entirely adnate, slightly convex and glabrous on top, not depressed around the style, 2-locular; ovules 6-10 campylotropous, thick, horizontal, on an adnate scarcely thickened placenta about the middle of the dissepiment. Styles terete not exerted, glabrous; stigma small. Fruit semisuperior, capsular loculicidally dehiscing at the apex into 2 valves, one cell usually abortive; endocarp of the free part soon falling at length followed by the separation of the entire endocarp. Seed 1, depressed ovoid, horizontal, peltate with a large hilum; testa thin; embryo filling the seed; cotyledons horny thick, unequal; radicle very short; plumule undeveloped.—Evergreen tree without bud scales; leaves ternate, dorsiventral, punctate, pinnately veined with a distinct intramarginal vein; flowers small, sessile, connate by their lower parts into heads of 3, the heads pedunculate, in long loose terminal or also axillary racemes or panicles, the whole inflorescence densely tomentose with very small irregularly branched septate hairs.

Type and only species: *A. ternata* S. T. Blake from northern Australia.

Allosyncarpia ternata S. T. Blake, species nova adhuc unica. Typus: *Beens* 30 prope Oenpelli in Australia boreali lectum (BRI, holotypus) atque *Byrnes* 2443 (BRI paratypus).

Arbor usque ad 18 m alta cortice griseo rimoso induta, surculis perjuvenilibus inflorescentiaque exceptis glabra. Folia ternata breviter vel brevissime petiolata; petiolis 1-10 mm longis; laminae coriaceae, anguste ovate vel anguste \pm ellipticae, acutae vel acuminatae, basi acutae, supra \pm nitidae infra pallidiores obscurioresque, vena intramarginali a margina incrassato 0.5-0.9 mm distanti atque utrinsecus costam nervis lateralibus primariis 16-22 praeditae hi cum costa angulum 50°-60° facientes fere recti atque venis secundariis minus regularibus et reticulationibus prominentibus interpositi, pro more 7.5-11 cm longae 1.2-2.8 cm latae et 3.5-6 mm longiores quam latiores. Inflorescentia angusta, laxa, racemiformia vel paniculata, 10-17 mm longa, pilis minutis, ramosis septatis cano albidotomentosa; rami pedunculique inferne temi sursum oppositi bracteati bracteis caducissimis; pedunculi 5-10 mm longi apicem versus par bractearum primo gerentes; bracteolae (?) minimae ad flores laterale adnatae. Flores sessiles 3-ni uniseriati, ad apicem ovariorum connati. Calyx turbinato-campanulatus, \pm 4 mm longus, tomentosus, supra ovarium longius productus post anthesin circumscissus; sepala 5 latissime triangularia acuta et \pm acuminata, 1.2-1.3 mm longa \pm 1.5 mm lata. Petala 5 late trullata ovata, tomentosa et ciliata, punctata, venulosa sepalis longiora 1.5-2 mm longa. Stamina 5 seriata, 2-4 mm longa in alabastro omnia deflexa, exteriora longiora tandem erecta vel patentia antherae subquadrate 0.4 mm longae lataeque, dorso fere ad apicem glandula parva gerentes. Ovarium apice leviter convexum glabrum. Capitula frugifera 3-1 fructus gerentia vel 3-loba vel transverse ellipsoidea vel irregulariter globosa, \pm 10 mm alta, usque ad 15 mm lata \pm 5 mm crassa.

Fructus semisuperior parte libera fere semiglobosa sed compressa verrucosa, loculo altero abortivo altero monospermo. Semen horizontale, a dorso visum irregulariter ovatum, a latere visum subreniforme, \pm 7-7.5 mm longum, 5-6 mm latum, 4-5 mm crassum; testa brunnea admodum rugulosum; cotyledones pallidi, punctati.

Tree up to 18 m high with grey fissured fibrous bark glabrous except for the inflorescence and the very young shoots. Leaves ternate, shortly or very shortly petiolate; petioles 1-10 mm long; blades coriaceous narrowly ovate or narrowly \pm elliptic acute or acuminate, acute at the base, somewhat shining above, paler and duller beneath, primary lateral veins in about 16-22 pairs at an angle of 50°-60° with the midrib running nearly straight to the intramarginal vein, with several less regular secondary laterals and prominent reticulations between the intramarginal vein 0.5-0.9 mm from the outside edge of the thickened margin, mostly 7.5-11 cm long and 1.2-2.8 cm wide, mostly 3.5-6 times as long as wide; reversion shoots? subsessile, only 3 times as long as wide.

Inflorescence narrow, racemiform or paniculate 10-17 cm long densely whitish tomentose with minute branched septate hairs; branches and peduncles ternate or sometimes opposite above with very early caducous bracts near the top and two pairs of minute bracteoles (?) nearly entirely adnate to calyx tube of the lateral flowers; no terminal peduncle. Flowers sessile 3-nate in a linear series connate for about $\frac{1}{3}$ their length (to the top of the ovaries). Calyx turbinate campanulate \pm 4 mm long, 3.5-4 mm wide at top, tomentose, the tube produced above the ovary for 1-1.5 mm and circumsciss at the level of the ovary after anthesis; sepals 5 very broadly triangular acute and \pm acuminate, \pm 1.2-1.3 mm long, \pm 1.5 mm wide. Petals 5 broadly trullate ovate, tomentose, ciliate, dotted and venulose, longer than the sepals, 1.5-2 mm long.

Stamens in about 5 series, 2-4 mm long, all deflexed in bud, the inner 2 series remaining so at anthesis. Anthers 0.4 mm long and wide with a small subapical gland at the back. Ovary slightly convex and glabrous on top; style slightly swollen in the middle half. Fruiting heads \pm 3-lobed when 3 fruits mature or transversely ellipsoid or irregularly globose when 1 or 2 fail to mature, \pm 10 mm high up to 15 mm wide, \pm 5 mm thick. Fruits semisuperior, the free part about semiglobose but compressed laterally, one cell abortive, the other with one seed, at length falling from the calyx tube after the seed has been shed leaving only the united bases of the calyx tube, persistent on the peduncle.

Seed horizontal depressed ovoid as viewed from above, somewhat reniform in side view, \pm 7-7.5 mm long, 5-6 mm wide and 4-5 mm thick, testa brown, somewhat rugose; cotyledons pallid, dotted.

Northern Territory: DARWIN & GULF DISTRICT: 16 miles NE of Oenpelli, bank of Birraduk Ck, in fringing forest, 60 m, Nov 1965, *Beens* 30 (wood sample W.107), (l. fl., bk.); Waterfall Ck, South Alligator R., on creek bank, Jan 1972, *Byrnes* 2443, (fr); springs along headwaters of South Alligator R., Jun 1956, *Bateman* (old infructescences) and same loc. in 1955, *Bateman* (l. fl., weathered remains of fr.); South Alligator R. (?same loc.) Nov-Dec 1959, *Bateman* (l. fl.).

The outstanding characters of *Allosyncarpia* are the elongated panicles or racemes of small heads of partly connate flowers with the calyx-tube produced above the ovary and this free part circumsciss after anthesis falling with the entire sepals and the very numerous free stamens in several continuous series the outer of which are about as long as the petals, the 2-celled ovary with comparatively few horizontal ovules, the semi-superior connate loculicidally dehiscent usually 1-seeded fruits with finally deciduous endocarp and upper part of exocarp and plump peltate but horizontal seed with large broad much

contorted cotyledons nearly hiding the short radicle, and the peculiar branched septate hairs in the inflorescence unlike any other hairs observed or reported for the Myrtaceae. The partly connate capitate flowers with free sepals and petals and connate fruits recall *Syncarpia* and the calyx tube circumsciss above the ovary, stamens densely packed in several series with the inner ones persistently deflexed, 2-celled ovary and usually solitary large plump peltate seed suggest some relationship with *Eucalyptopsis*, while the ovary is not depressed around the style in any of them. *Syncarpia* and *Eucalyptopsis* have opposite leaves, very different inflorescences, simple non-septate hairs or none at all and erect seeds, while *Syncarpia* also has a persistent calyx, 1–2 seriate stamens, 3–locular ovary, many ovules erect from a basal placenta, narrow seeds with a basal hilum and radicle about half as long as the cotyledons, and conspicuous bud-scales. On the other hand *Eucalyptopsis* has the flowers free in the head with entirely adnate sepals shed together with the tightly appressed petals as a calyptra, peltate placenta, less twisted cotyledons, (?) persistent pericarp and no intramarginal vein in the leaves.

Eucalyptopsis C. T. White, J. Arnold Arb. 32:139-141, Pl. I (1951), was described as having an irregularly lobed calyx, no petals and stamens in four groups, but it is now clear that the single flower available has split during drying. The material now available shows that the sepals are entirely adnate in the bud as a very short broad calyptra which is somewhat irregularly circumsciss immediately above the stamens and often remains attached by a small part to one side of the expanded flower; there are four imbricate petals tightly appressed to one another and to the sepals and falling with them. The structure of the operculum and its adherence in the open flower recalls that of *Eucalyptus terminalis* and related species. The very numerous stamens are crowded in about five continuous series. White suggested that its closest ally was *Pleurocalyptus* Brogn. & Gris. from New Caledonia which has a somewhat similar calyptrate calyx tending to split into irregular lobes, but the calyx-tube is persistent and the petals persist on the open flower while the arrangement of the stamens in one series opposite the sepals and more than one opposite the petals, the almost superior (perigynous) 4–5–celled ovary with a depression around the style and bifid basal placentas with marginal ovules as well as the alternate leaves set this genus apart from any of the others considered in this paper; the hairs are simple and non-septate.

Eucalyptopsis is perfectly glabrous but *Syncarpia* is more or less pubescent at least on very young shoots and the top of the ovary with simple non-septate hairs. *Choricarpia* Domin, based on *Syncarpia leptopetala* F. Muell. and originally distinguished from *Syncarpia* because of the free though densely packed flowers with only 20 stamens and 2–celled ovary with a solitary erect (base) ovule in each cell has 2–armed hairs with a short central stalk (malpighiaceae hairs) as in the South American *Calyptranthes* and *Marlieria* of the Myrtoideae. Bentham followed Mueller's placement of *Syncarpia* with some misgiving and with the suggestion that it might prove to be generically distinct, in Benth. & Hook., Gen. Pl. 1:709 (1865), Fl. Aust. 3:266 (1867) and J. Linn. Soc. Bot. 10:145-6 (1867). Baillon referred the species wrongly determined as *Syncarpia laurifolia* to a new monotypic section of *Metrosideros*, *Metrosideros* sect. *Sarcynpia* Baill. Hist. Pl. 6,362, 363 (1877). A second species *C. subargentea* (C. T. White) L. Johnson (*Syncarpia subargentea* C. T. White and *S. subargentea* C. T. White var. *latifolia* C. T. White) has similar 2–armed hairs but I have not seen ripe fruits or seeds of either. The genus further differs from *Syncarpia* in having no bud-scales.